



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/682,540	09/17/2001	Mats Danielsson	GPD0021-US	5619

28694 7590 10/24/2002

HOWREY SIMON ARNOLD & WHITE LLP
1299 PENNSYLVANIA AVE., NW
BOX 34
WASHINGTON, DC 20004

EXAMINER

HOBDEN, PAMELA R

ART UNIT PAPER NUMBER

2882

DATE MAILED: 10/24/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/682,540

Applicant(s)

ENCK, RICHARD S.

Examiner

Pamela R. Hobden

Art Unit

2882

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 24 June 2002.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 15-17 and 22-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 15-17 is/are allowed.
- 6) ☒ Claim(s) 22-39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim 22,23,25-26 are rejected under 35 U.S.C. 102(b) as being anticipated by Tan et al.

Tan et al discloses an arrangement for detecting x-ray radiation comprising a carrying member having detectors on a side thereof the detectors including a plurality of sensors provided on a substrate, the detectors are arranged substantially edge to edge and side by side in at least one row on the side of the carrying member, and the detectors comprising a sensor plane, the sensor plane being substantially parallel to a surface of the carrying member and the carrying member being arranged so that the sensor plane is angularly oriented otherwise than perpendicular to incident x-ray beams. (figure 3)

Regarding claim 23: At least two detectors are arranged in at least two levels, the levels being displaced relative one to the others and such that an inactive section of at least one detector is overlapped with an active section of another detector. (figure 3)

Regarding claim 25: The carrying member is tilted for arrangement of the sensor plane at the angle. (figure 3)

Regarding claim 26: The detectors are arranged on a supporting member. (11a)

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 24,27-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tan et al (US 4,694,399). Tan et al's teachings are as shown above. Tan et al does not specifically disclose a sensor plane that is parallel to incident x-ray beams.

However, given that they are tilted, and non-perpendicular, it would be obvious to one skilled in the art to increase or decrease the angle of the plane in order to have a sensor plane that is parallel to incident x-ray beams. One would be motivated to have such an angle in order to eliminate direct incident x-ray beams and to primarily pick up back-scatter, and thus minimize noise on the detector from incident x-rays.

Regarding claim 27: Tan et al fails to specifically disclose a detector that comprises one of a scintillator optically connected to a ccd, a silicon diode, a gaseous detector, or a parallel plate chamber in which the gas volume is oriented edge-on to the incident x-rays. These detector designs are obvious to one skilled in the art, and the selection of one over another would be motivated by a desire to obtain a certain pattern or type of image from the object being scanned.

Regarding claim 28-32: Tan et al fails to specifically disclose an x-ray apparatus that includes an essentially planar member having an elongate slot formed therein, a detector array in communication with the slots, and a moving arrangement configured to move a beam directing member relative to the object being examined. It is well known in the art that the use of a radiation detector array is be utilized in an x-ray system of some type. Standard configuration in an x-ray apparatus includes a collimator, (an elongate slot,) the detector in communication with the slot, and a moving arrangement that either moves the beam or moves the object being examined. One would be motivated to utilize an x-ray apparatus with such a detector array in order to be able to utilize the detector array. A collimator is necessary in order to focus the beam, and a moving arrangement, either manual or automatic is necessary in order to properly place the beam.

Regarding claim 33: Tan et al does not specifically disclose a refracting and focusing member. It would be obvious to one skilled in the art to utilize a refracting member in order to improve focus of the beam.

Regarding claim 34: Tan et al does not specifically disclose a means for acquiring data from the detector arrays at intervals corresponding to a fraction of a width of the detector arrays. It would be obvious to one skilled in the art to have small slices, smaller than the width of the detector arrays, in order to improve image quality, and minimize noise.

Regarding claim 35: Tan et al does not specifically disclose a detector array that is made of silicon wafers oriented substantially edge on to incident x-rays. It is obvious

Art Unit: 2882

to one skilled in the art to utilize silicon wafers oriented substantially edge on to incident arrays as a part of the detector array. One would be motivated to have silicon wafers substantially edge on to incident arrays in order to minimize signal loss.

Regarding claim 36: Tan et al does not disclose starting a scan, positioning the slots, passing the slots, measuring scan x-ray fluxes together with position coordinates for all detectors, and terminating the scan only after the slots and corresponding detectors are substantially outside the field of view. These processes are well known in the art and necessary in order to obtain a proper scan. It would be obvious to one skilled in the art to start the scan, pass the slots measure fluxes and terminate the scan after the slots and detectors are outside of the field of view in order to minimize radiation exposure after the scan, and ensure adequate scanning exposure during the imaging process.

Regarding claim 37-39: Tan et al does not disclose the incrementing of the scanning at least a distance corresponding to a fraction of a distance of the detector arrangements, wherein the scan is continuous and a readout of data is performed at intervals corresponding to a fraction of a distance between the detector arrangements, and wherein the readout data for each increment and for each sensor array is stored as data arrays and wherein the stored data for each sensor array is separately combined to form an image and wherein images obtained by each sensor array are superimposed to form a final image. CT scans regularly increment scanning of a distance at a fraction of a distance of the detector arrangement in order to minimize error in the image. The scan is continuous, and the readout is performed at intervals necessary for the scan.

Manipulation of the image data is a well known capability of most computer processing programs, and this process can be utilized to minimize and correct for errors in the final image.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pamela R. Hobden whose telephone number is (703)-306-5435. The examiner can normally be reached on Monday-Friday 8:30-5:00.


Application/Control Number: 09/682,540
Art Unit: 2882

Page 7

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (703)-305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are (703)-308-7382 for regular communications and (703)-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)-308-0956.

prh
October 21, 2002


ROBERT H. KIM
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800